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IN THE CLAIMS:

1. (original) A process for providing an oxide gap fill on a substrate, comprising:

providing a substrate with gaps to be filled;

contacting the substrate with a first oxide precursor under high density plasma conditions at a first pressure less than about 10 millitorr, wherein said gaps are partially filled with a first oxide material; and

further contacting the substrate with the second oxide precursor and an inert gas under high density plasma conditions at a second pressure greater than 10 millitorr, wherein said gaps are further filled with a second oxide material.

2. (original) The process of Claim 1, wherein the second pressure is greater than about 50 millitorrs.

3. (original) The process of Claim 1, wherein the second pressure is at about 100 millitorrs to 500 millitorrs.

4. (original) The process of Claim 1, wherein the second pressure is greater than about 500 millitorrs.

5. (original) The process of Claim 1, wherein the steps are repeated to completely fill the gap.

6. (original) The process of Claim 1, wherein the inert gas comprises argon, helium, hydrogen, or combinations comprising at least one of the foregoing gases.

7. (original) The process of Claim 1, wherein the gas flow and power are constant during high-density plasma conditions of the first and second pressures.

8. (original) The process of Claim 1, wherein the first and second oxide materials are different.

9. (currently amended) The process of Claim 1, wherein the first and second oxide materials comprise silicon dioxide, ~~silicon~~ nitride, silicon oxynitride, ~~silicon carbide~~, phosphorous silicon-doped glass, boron phosphorous silicon-doped glass, tetraethoxysilane based silicate glass, and fluorinated silicate glass.

10. (original) A method of depositing a conformal dielectric layer on a substrate disposed in a process chamber, comprising:

providing a substrate on an electrode in the process chamber, wherein the substrate has at least one gap;

flowing an oxide precursor into the process chamber under high density plasma conditions at a pressure less than 10 millitorr to partially fill the at least one gap; and

increasing the pressure in the chamber to greater than 10 millitorr and flowing an inert gas into the chamber to fill the at least one gap.

11. (original) The method of Claim 10, wherein the inert gas comprises argon, helium, hydrogen, or combinations comprising at least one of the foregoing gases.

12. (original) The method of Claim 10, wherein the pressure in the chamber is increased to greater than 50 millitorr.

13. (original) The method of Claim 10, wherein the pressure in the chamber is increased to greater than 100 millitorr.

14. (original) The method of Claim 10, wherein the pressure in the chamber is increased to greater than 1,000 millitorr.

15. (original) The method of Claim 10, wherein flowing the oxide precursor comprises silane and oxygen gas.

16. (original) The method of Claim 10, wherein flowing the oxide precursor comprises flowing silane at a flow rate of about 20 to about 120 sccm, flowing oxygen at a flow rate of about 30 to about 250 sccm, and flowing argon at a flow rate of about 0 to about 100 sccm.

17. (original) The method of Claim 10, wherein the at least one gap has an aspect ratio greater than 2:1.

18. (original) The method of Claim 10, wherein flowing the oxide precursor into the process chamber is at a constant flow rate and a constant power.

19. (new) The process of Claim 1, further comprising providing an oxide liner over the substrate after said gaps are further filled with the second oxide material.

20. (new) The process of Claim 19, further comprising depositing a nitride layer over the oxide liner.

21. (new) The process of Claim 1, further comprising contacting the substrate with a third insulating layer precursor under high density plasma conditions at a third pressure less than 10 millitorr, wherein said gaps are further filled with a third insulating layer material.

22. (new) A process for providing a gap fill on a substrate, comprising:

providing a substrate with gaps to be filled;

contacting the substrate with a first insulating layer precursor under high density plasma conditions at a first pressure less than about 10 millitorr, wherein said gaps are partially filled with a first insulating layer material; and

further contacting the substrate with a second insulating layer precursor and an inert gas under high density plasma conditions at a second pressure greater than 10 millitorr, wherein said gaps are further filled with a second insulating layer material.

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23. (new) The process of Claim 22, wherein the first and second insulating layer materials comprise one or more of silicon dioxide, silicon nitride, silicon oxynitride, silicon carbide, phosphorous silicon-doped glass, boron phosphorous silicon-doped glass, tetraethoxysilane based silicate glass, and fluorinated silicate glass.